# 2007 Solar America Cities Selections

## Solar America Initiative - Market Transformation


DOE Solar Energy Technologies Program

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Media contact: kevin.brosnahan@ee.doe.gov

Technical contact: charles.hemmeline@ee.doe.gov

# President's Vision for the Solar America Initiative

## Changing the Way We Power Our Homes and Businesses

"I believe that with the proper amount of research, whether it be public or private, we will have solar roofs that will enable the American family to be able to generate their own electricity."

- President Bush, National Renewable Energy Conference, St. Louis, MO, October 2006

"One day, technologies like solar panels and high-efficiency appliances and advanced insulation could even allow us to build 'zero-energy homes' that produce as much energy as they consume."

- President Bush, 16th Annual Energy Efficiency Forum, Washington, DC, June 2005

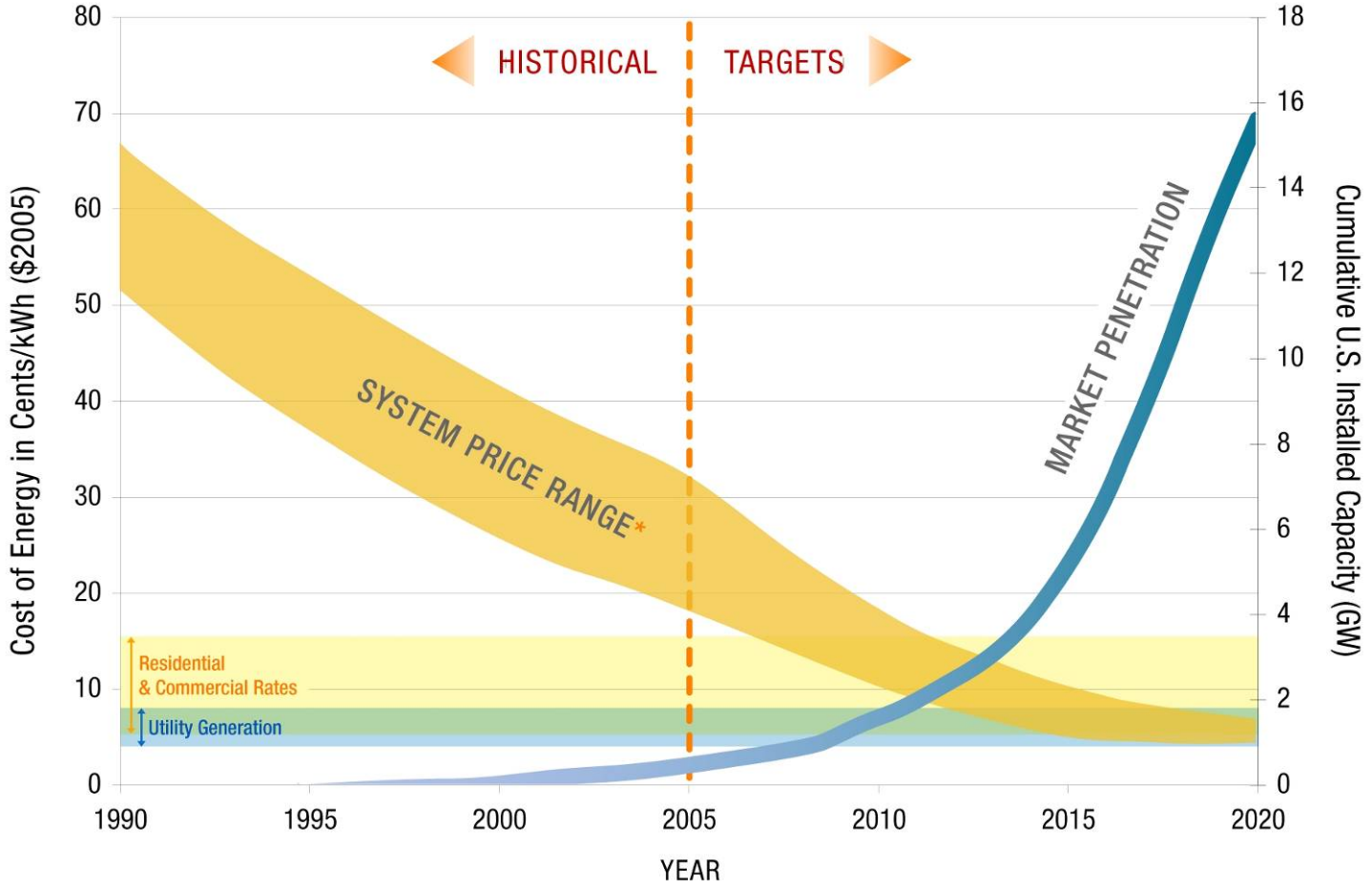
*"So tonight, I announce the Advanced Energy Initiative -- a 22-percent increase in clean-energy research -- at the Department of Energy, to push for breakthroughs in two vital areas. To change how we power our homes and offices, we will invest more in zero-emission coal-fired plants, revolutionary solar and wind technologies, and clean, safe nuclear energy."*

- President George Bush, 2006 State of the Union Address

*The goal of the Solar America Initiative is to help make solar technologies cost-competitive across all U.S. markets by 2015.*

# President's Goal for the Solar America Initiative (SAI)

## Making Solar Cost-Competitive Nationwide by 2015

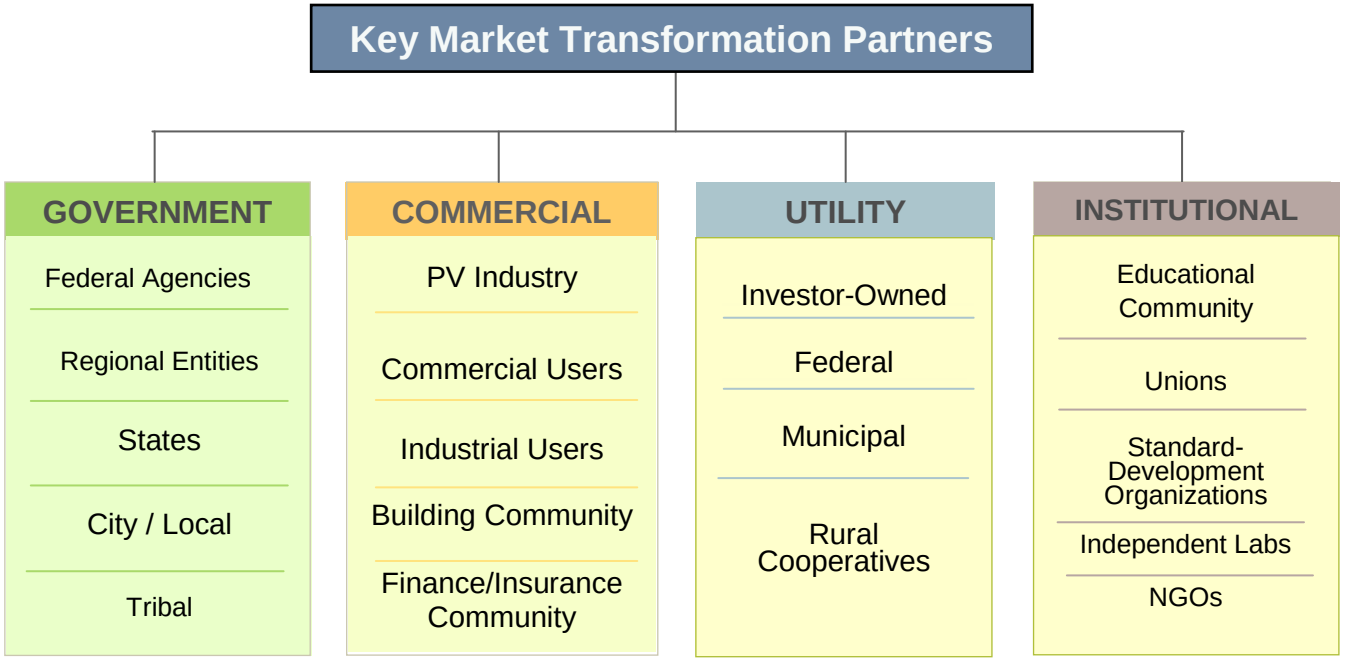



| Market Sector | Current U.S. Market Price Range (¢/kWh) | Cost (¢/kWh) Benchmark 2005 | Cost (¢/kWh) Target 2010 | Cost (¢/kWh) Target 2015 |
|---|---|---|---|---|
| Residential | 5.8-16.7 | 23-32 | 13-18 | 8-10 |
| Commercial | 5.4-15.0 | 16-22 | 9-12 | 6-8 |
| Utility | 4.0-7.6 | 13-22 | 10-15 | 5-7 |

# DOE engaged solar stakeholders in multiple forums to identify market barriers

The following resources were used to identify and prioritize market transformation activities:

- Guidance of a strategic planning team composed of Federal and laboratory personnel with expertise in market transformation areas.
- Input collected during two Technical Exchange Meetings (TEM) held in June 2006 in Washington, D.C., and San Francisco, California.
- An official Request for Information (RFI) issued by DOE to solicit input from stakeholders for the strategic planning process.



# DOE identified significant market barriers to solar technology commercialization

- Lack of communication, information dissemination, and consumer awareness
- Inadequate codes and standards
- Lack of appropriate, consistent interconnection standards
- Lack of equitable and effective net-metering guidelines
- Inconsistent utility rate structure practices
- Complex permitting procedures and fees
- Inconsistent and lack of widespread incentives and other drivers
- Limited education/experience of key building trades with solar technology
- Lack of trained technical personnel, reliable installers, and maintenance services
- Lack of flexible, sophisticated, proven financial approaches

# SAI market transformation activities address two broad objectives

**Reduce barriers to the commercialization of solar energy technologies**

- Support the development of codes and standards that facilitate the installation of solar technologies
- Improve grid integration and net metering practices
- Provide information and best practices to state government officials
- Support a trained workforce able to meet future increases in solar technology demand

**Promote market expansion of solar energy technologies**

- Build partnerships with cities to aggressively promote solar technologies within national electricity load centers.
- Support the installation of novel solar technologies into replicable large-scale high visibility solar installations.

**Market barriers increase the price of solar systems and the time to commercialization. Market transformation activities reduce costs and time, resulting in widespread deployment.**

# Solar America Cities

## Activity Objectives:

- Partner with cities committed to achieving a sustainable solar infrastructure through a comprehensive, city-wide approach to solar technology that facilitates mainstream adoption and provides a model for other cities to follow.

## Project Overview

- The selected cities will receive a combined $2.5 M in DOE funding plus substantial hands-on assistance in their plans to:
  - Integrate solar technologies into city energy planning, zoning and facilities
  - Streamline city-level regulations and practices that affect solar adoption by residents and local businesses – including permitting, inspections, local codes
  - Promote solar technology among residents and local businesses through outreach, curriculum development, incentive programs, and other innovative approaches
- To ensure maximum impact, cities were required to submit a letter of support from their mayors and local utilities

# FY 2007 Solar America Cities

The 13 Solar America Cities selected in 2007 are:

- **Ann Arbor, MI**
- **Austin, TX**
- **Berkeley, CA**
- **Boston, MA**
- **Madison, WI**
- **New Orleans, LA**
- **New York, NY**
- **Pittsburgh, PA**
- **Portland, OR**
- **Salt Lake City, UT**
- **San Diego, CA**
- **San Francisco, CA**
- **Tucson, AZ**

**Eight are among the largest 50 cities in the U.S.**

**Solar America Cities are located in 11 states.**

# Ann Arbor, Michigan

## "Ann Arbor Solar City Partnership"


### Goals

- Help the city reach its goal of 20% renewable energy by 2015 by utilizing a wide range of community partners and resources to remove market barriers to the adoption of solar energy
- Help local solar manufactures and contractors to increase business

### Project Highlights

- Develop a comprehensive solar plan for the city
- Hold solar informational workshops for consumers and installers
- Implement a community-based marketing campaign
- Offer city incentives and rebates for installations

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| **Mayor** | John Hieftje |
| **Population (2000)** | 114,024 |
| **Participants** | **City of Ann Arbor Energy Office**, Michigan Energy Office, Great Lakes Renewable Energy Association |

# Austin, Texas

## "Austin Solar City Partnership"

## Goals

- Educate the city's teachers and youth about the benefits of solar energy
- Reduce information barriers that prevent participation in the city's renewable energy and energy conservation programs
- Increase solar installation visibility
- Establish benchmarks for distributed and central solar to be integrated into Austin Energy's generation plan

## Project Highlights

- Install solar energy systems in local schools and develop curricular materials to accompany these systems
- Work with local non-profits to promote and cross-market the solar, energy efficiency and green building programs of Austin Energy
- Assess the rooftop area suitable for solar development
- Assess the potential for hybrid solar/wind installations

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| **Mayor** | Will Wynn |
| **Population (2000)** | 690,252 |
| **Participants** | **Austin Energy**, Texas Solar Energy Society, Clean Energy Associates, and local school districts |

# Berkeley, California

## "Smart Solar Program: A Partnership to Serve the East Bay"

### Goals

- Increase the market share of solar energy technologies in the residential and small and medium commercial sectors in the East Bay
- Build local capacity by working with local suppliers, installers, trade associations and financiers

### Project Highlights

- Develop and implement a pilot turn-key program to install 142 kW of PV installations at 10 residential and 5 commercial sites, and 10 large solar hot water and air heating systems
- Launch a partnership with PG&E East Bay Energy Watch to expand the scope and depth of utility services provided in the region
  - Annually install 800 kW of PV and 24,000 therms of thermal projects

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| **Mayor** | Tom Bates |
| **Population (2000)** | 102,743 |
| **Participants** | **Berkeley Office of Energy and Sustainable Development**, PG&E East Bay Energy Watch, Community Services Corporation, Build It Green, Sustainable Berkeley, The City of Oakland, UCB Renewable and Appropriate Energy Laboratory |

# Boston, Massachusetts

## "Solar Boston"

### Goals

- Examine barriers to widespread solar deployment and develop a strategy for installing solar throughout Boston
- Coordinate resources and best practices of Boston with DOE, the Commonwealth of Massachusetts, utilities, electrical workers' unions, industry and others
- Create a non-profit organization to accomplish the goals of the solar partnership members

### Project Highlights

- Map feasible locations for solar installations
- Market solar energy to prime sites
- Prepare a project-labor agreement
- Plan city-wide bulk purchase, financing and installation of solar technology

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| **Mayor** | Thomas M. Menino |
| **Population (2000)** | 596,638 |
| **Participants** | **The City of Boston**, Massachusetts Technology Collaborative, Commonwealth of Massachusetts, NSTAR Electric and Gas, KeySpan Energy Delivery, International Brotherhood of Electrical Workers, Boston Community Capital, Solar Energy Business Association of New England, Local Governments for Sustainability, Massachusetts Energy Consumers Alliance, Green Roundtable, New Ecology, Inc. |

# Madison, Wisconsin

## "Midwest Solar City Model (MadiSUN)"

### Goals

- Coordinate and galvanize substantial local and state resources to showcase how a Midwest city can dramatically increase the use of solar energy
- Establish a two-year program, MadiSUN, to provide an ongoing commitment to sustainability

### Project Highlights

- Double solar energy utilization in Madison over the two year period by helping building owners buy solar by lowering transaction costs
- Review and modify the City's procedures and policies for solar permitting and installation to make them more supportive of solar systems

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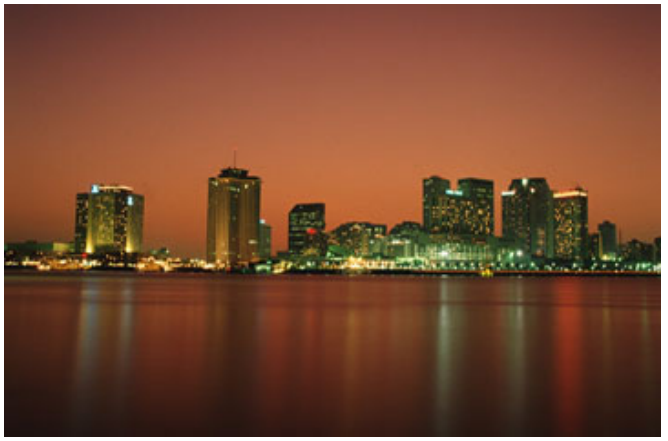
| **Mayor** | Dave Cieslewicz |
| **Population (2000)** | 221,551 |
| **Participants** | **The City of Madison**, Focus on Energy, University of Wisconsin-Extension, Madison Gas & Electric Co., Madison Area Technical College, Sustain Dane, Environmental Action Teams, Midwest Renewable Energy Association |

# New Orleans, Louisiana

## "Solar Cities Initiative"



### Goals

- Accelerate the adoption of solar technology in New Orleans by partnering with DOE
- Include solar technology in the construction and renovation of new homes and businesses wherever applicable and economically feasible

### Project Highlights

- Implement a publicity and outreach plan to increase demand for private solar
- Evaluate and modify city regulations hindering the use of solar technologies
- Installation solar on city government properties
- Develop incentives that support solar technology in residential developments
- Conduct outreach to develop a solar supply base in New Orleans

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| **Mayor** | Ray Nagin |
| **Population (2000)** | 484,674 |
| **Participants** | **Office of Recovery Management**, Global Green, FutureProof, Alliance for Affordable Energy |

# New York, New York

## "Solar City Strategic Partnership: NYC Solar"

**Goal**

- Achieve large-scale solar energy market growth in New York City that compliments long-term sustainability planning efforts and the City's greenhouse gas reduction goals

**Project Highlights**

- Develop a long-term solar energy plan
- Conduct a feasibility study of real-time pricing for PV net metering
- Evaluate how to integrate solar into emergency planning and demand reduction programs
- Create new municipal solar energy incentives
- Address interconnection and code barriers through a collaborative stakeholder process

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| **Mayor** | Michael Bloomberg |
| **Population (2000)** | 8,143,198 |
| **Participants** | **New York City Economic Development Corporation**, the Mayor's Office of Long-Term Planning and Sustainability, City University of New York, New Your State Energy Research and Development Authority, state and city stakeholders |

# Pittsburgh, Pennsylvania

## "The Pittsburgh Solar Initiative"

**Goal**

- Build on Pittsburgh's reputation as a national leader in green practices by developing a distributed approach to solar adoption, as a model for other northern cities

**Project Highlights**

- Power traffic lights along main roads with solar power to eliminate their consumption of brown power and ensure they remain operational during a blackout
- Incorporate solar on new construction in two city parks
- Sponsor Carnegie Mellon's entry into the Solar Decathlon

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| **Mayor** | Luke Ravenstahl |
| **Population (2000)** | 316,718 |
| **Participants** | **The City of Pittsburgh**, Carnegie Mellon University, the Green Building Alliance, Duquesne Light |

# Portland, Oregon

## "Solar Now!"

**Goal**

- Build on its longstanding commitment to renewable energy by launching a robust program to facilitate the widespread adoption of solar technology and establish Portland as a leader in solar energy

**Project Highlights**

- Develop a solar marketing plan to assist property owners with the technical process of implementing solar technologies and applying financial incentives to make solar more affordable
- Align City policies to promote solar technology by examining how to power municipal operations with solar energy, removing regulatory barriers and adopting policies to encourage the use of solar technology

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| **Mayor** | Tom Potter |
| **Population (2000)** | 562,690 |
| **Participants** | **City of Portland Office of Sustainable Development**, Solar Oregon, Energy Trust of Oregon, Oregon Department of Energy, Oregon Solar Energy Industries Association |

# Salt Lake City, Utah

## "Solar Salt Lake"

**Goal**

- Develop a fully-scoped city and county-level implementation plan to facilitate an additional 10 MW of solar PV installations by 2015 and serve as a model for other cities integrating solar into their policy, planning and processes

**Project Highlights**

- Identify and reduce barriers to solar deployment in Salt Lake City and County
- Implement a comprehensive plan for Salt Lake City and County that establishes a long-term commitment to solar deployment
- Partner with private entities, including land developers, to advance residential solar installations in new housing developments

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| **Mayor** | Rocky Anderson |
| **Population (2000)** | 181,743 |
| **Participants** | **Salt Lake City Corporation,** Salt Lake County, Utah Clean Energy, Rocky Mountain Power, Kennecott Island, the Daybreak ENERGY STAR housing development |

# San Diego, California

## "Sustainable Energy 2050 Plan"

**Goal**

- Provide a blueprint for the nation through their plan to create an energy infrastructure that is diversified, reliable, and as self-contained as possible, as they advance the Solar America Initiative

**Project Highlights**

- Update GIS analysis of solar installations and potential sites
- Conduct performance analysis of approximately 12 MW of existing PV
- Produce outreach materials to stimulate a robust project pipeline in the city
- Develop a Citywide solar implementation plan
- Study the impact of solar on property value/resale
- Develop 3 case studies to explain solar energy systems from design to use

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| **Mayor** | Jerry Sanders |
| **Population (2000)** | 1,256,509 |
| **Participants** | **City of San Diego**, San Diego Regional Energy Office |

# San Francisco, California

## "Solar San Francisco"

### Goals

- Realize the City's ambitious renewable energy goals established in its Electricity Resource Plan by targeting barriers facing solar technology market penetration

### Project Highlights

- Develop a program to group commercial customers into one or more large, aggregated purchasing pools to be marketed to different types of perspective solar installers
- Identify sites for large installations and marketing the prospects to building owners
- Develop a plan to tackle problems with installing solar on multi-tenant buildings

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| **Mayor** | Gavin Newsom |
| **Population (2000)** | 744,041 |
| **Participants** | **Department of Environment for the City and County of San Francisco** |

# Tucson, Arizona

## "Tucson Solar Initiative"

### Goals

- Expand the Tucson solar energy market through accelerated investments and establish a mechanism for sustainable solar energy integration for the next ten years
- Transform knowledge and financing market barriers into opportunities for solar installations

### Project Highlights

- Implement a City of Tucson Solar Energy Integration Plan and a Greater Tucson Solar Energy Development Plan
- Enhance financing techniques for large-scale solar energy installations
- Develop and disseminate solar best practices and other outreach

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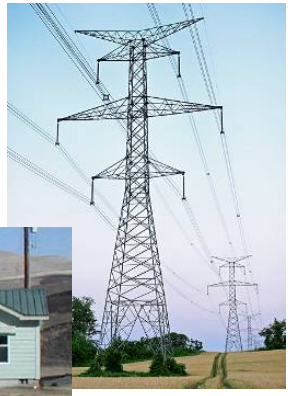
|---|---|
| **Mayor** | Bob Walkup |
| **Population (2000)** | 515,526 |
| **Participants** | **The City of Tucson**, Tucson Electric Power, Greater Tucson Coalition for Solar Energy, Tucson-Pima Metropolitan Energy Commission, the Arizona State Department of Commerce Energy Office |

# Previously Announced Market Transformation Selections

# Solar America Board of Codes and Standards

## Winner: New Mexico State University (collaborative)

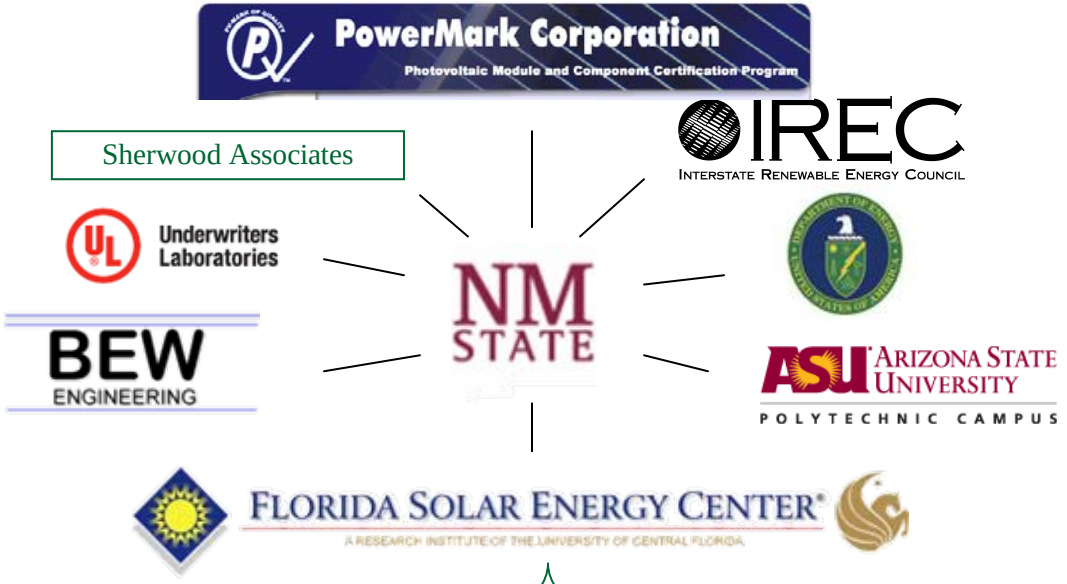


**Activity Objectives:**

- Improve the responsiveness, effectiveness, and accessibility of codes and standards in all markets (federal, state, local, utility).
- Focus on codes and standards supports new technologies of the SAI Technology Pathway Partnerships.
- Codes and Standards are the backbone of the success of SAI. Without consistent support for codes and standards development, solar cannot be deployed on a large-scale.

# New Mexico State University

## Solar America Board of Codes and Standards




**Building and Electrical Codes**
*Article 690 Guidance*

**Product Safety**
*Reconcile UL1703/IEC61730, UL 1741/IEC32109*

**National Standards Coordination**
*Revise IEEE 1547*

**Interconnection, Net Metering**
*Create Model Local Codes*

**International Standards Coordination**
*Monitor International Codes and Standards;*
*Centralize U.S. participation*

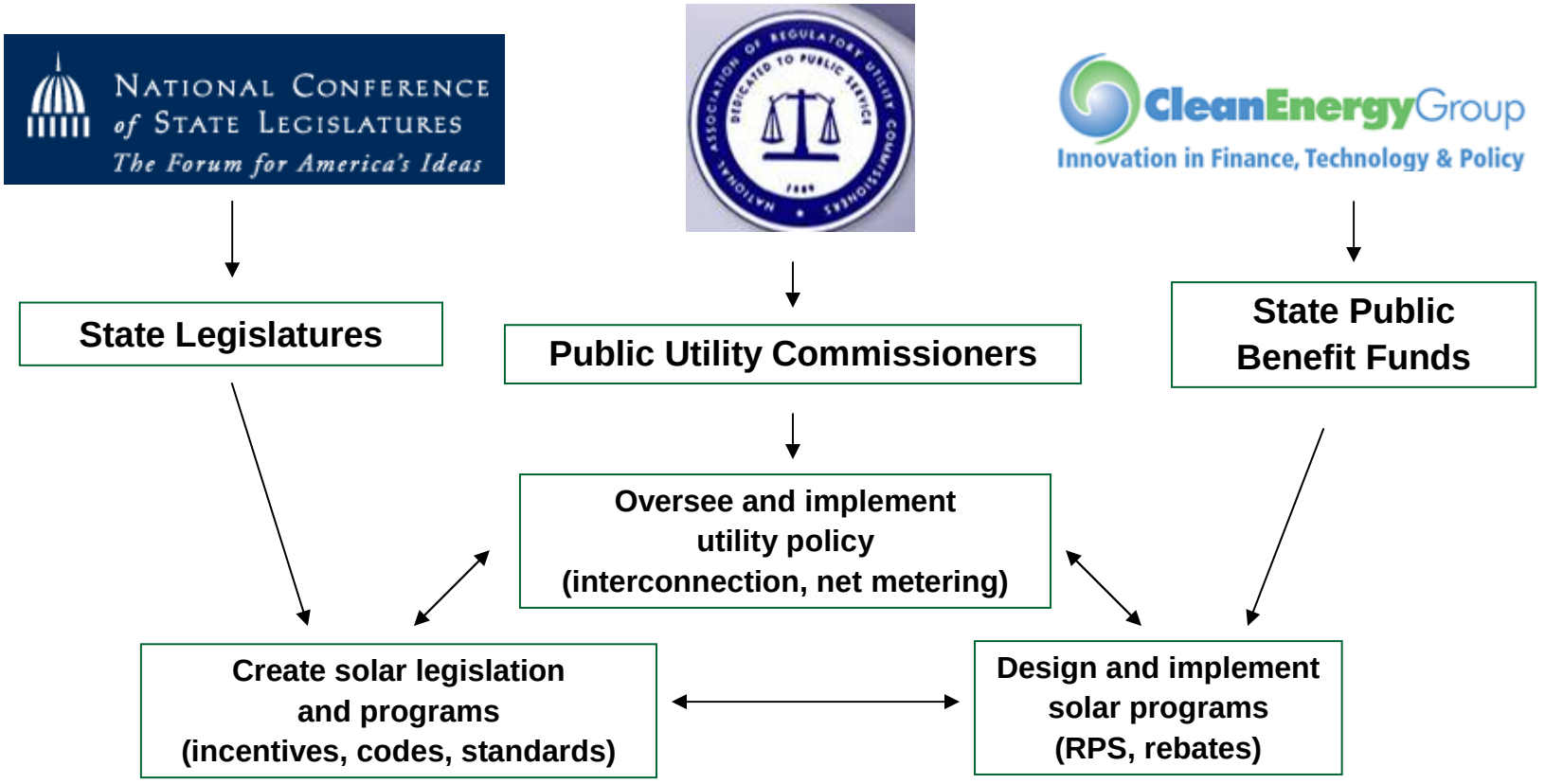
# State Technical Outreach

Winners: National Conference of State Legislatures
Clean Energy Group
National Association of Regulatory Utility Commissioners

**Activity Objectives**:

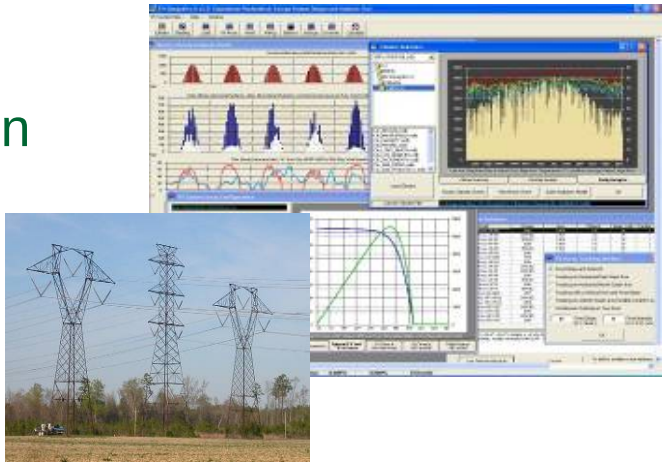
- Build relationships with State decision-makers (such as State legislatures, energy offices, public utility commissions and air quality offices) responsible for enacting policies, programs, and plans that are key drivers for solar technology market transformation
- Provide key state actors with solar best practices and up-to-date, accurate information about solar technology, so they are positioned make informed solar policy decisions

# National Conference of State Legislatures
# Clean Energy Group
# National Association of Regulatory Utility Commissioners



# Utility Technical Outreach

Winner: Solar Electric Power Association



**Activity Objectives:**

- Utilities are critical to reach the SAI goals through their ability to enable sweeping progressive changes across large market areas for solar technologies
- Enlist the assistance of a utility membership organization to deliver key technical and informational assistance to utilities to promote their acceptance and use of solar

# Solar Electric Power Association (SEPA)

## Utility Technical Outreach


SEPA will assist their 175 member organizations and non-member utilities in the following ways:

- **Develop business cases for solar**
- **Provide current information on solar technologies**
- **Disseminate innovative solar program design information to utilities**

# PV Capacity Credit Study

Winners: Tucson Electric Power
SUNY, University of Albany



**Activity Objectives:**

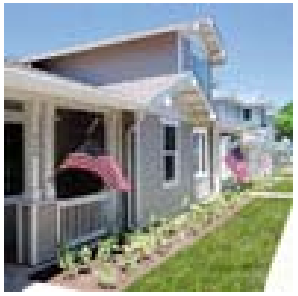
- Support one-year studies to analyze utility capacity credit valuation of distributed solar to benefit utility stakeholders and enable their incorporation of more solar within their service territories
- Measure the full impact and value of distributed photovoltaics on the grid in a consistent manner

# Solar America Showcases

**Activity Objective:**

Provide technical assistance to large-scale, high-impact solar installation projects initiated by businesses, developers, cities, states or other entities that showcase replicable novel solar technologies.

**Selected Showcases include:**



**Forest City Military Communities, Hawaii**

**Orange County Convention Center, Florida**

**City of San Jose, California**

U.S. Department of Energy
**Energy Efficiency and Renewable Energy**
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

# Solar America Initiative Across America


## Activities:

### Transforming Markets and Creating Demand

**Codes and Standards:**
Solar America Board of Codes and Standards (NM)

**Utility Technical Outreach:**
Solar Electric Power Association (DC)

**State Technical Outreach:**
Clean Energy Group (VT)
National Assn of Regulatory Utility Commissioners (DC)
National Conference of State Legislatures (CO)

**Solar America Cities:**
Ann Arbor (MI)
Austin (TX)
Berkeley (CA)
Boston (MA)
Madison (WI)
New Orleans (LA)
New York (NY)
Pittsburgh (PA)
Portland (OR)
Salt Lake City (UT)
San Diego (CA)
San Francisco (CA)
Tucson (AZ)

**Solar America Showcases:**
City of San Jose (CA)
Forest City Military Communities (HI)
Orange County Convention Center (FL)

**PV Capacity Credit Valuation Study:**
State University of New York (NY)
Tucson Electric Power (AZ)

**SAI Federal Projects:**
Architect of the Capitol (DC)
Smithsonian Institution (DC)

### Developing Products and Building Supply

**Technology Pathway Partnerships:**
Amonix (CA)
Boeing (CA)
BP Solar (MD)
Dow Chemical (MI)
General Electric (DE)
GreenRay (MA)
Konarka (MA)
Miasolé (CA)
Nanosolar (CA)
Soliant (CA)
SunPower (CA)
United Solar Ovonic (MI)

**PV Module Incubator:**
AVA Solar (CO)
Blue Square Energy (MD)
CaliSolar (CA)
EnFocus Engineering (CA)
MicroLink Devices (IL)
Plextronics (PA)
PrimeStar Solar (CO)
Solaria (CA)
SolFocus (CA)
SoloPower (CA)

**The Solar America Initiative (SAI)** is accelerating the development of solar technologies, including photovoltaics (PV) and concentrating solar power (CSP) systems, with the goal of making them cost-competitive across all sectors by 2015. This work could not be successful without the collaboration of all stakeholders in the solar community. This map illustrates the location of several SAI participants…from Solar America City awardees who will be developing solar projects and building awareness in their respective communities to multinational corporations who will work in strategic alliances with other companies, national laboratories, and universities to tackle solar manufacturing challenges. It is truly a nationwide effort to create a Solar America.